

USSR

UDC 681.121.8:662.75:629.7

GROKHOL'SKIY, A.L., YAKOVLEV, L.G., and TIKHOMIROV, Yu. F.

"On the Problem of Optimum Processing of Output Data of Aviation Fuel Gauges"

Tr. Metrol In-tov SSSR [Works of Metrological Institutes USSR], Vol 135(195), 1972, pp 201-205 (from Referativnyy Zhurnal, No 6, Jun 72. 34. Aviation and Rocket Engines. Abstract No 6.34111)

Translation: The necessity to present the output signal as a transient random process depends on the effect of detrimental dynamic disturbances on the exactness of aviation fuel gauges. From the viewpoint of the theory of optimum filters, the schema for the separation of the mathematical expectation of this process is synthesized from the additive mixture of the slowly changing component of the useful signal, coincident with the mathematical expectation of the process, and the stationary random interference. The possibility is indicated to use for these purposes the informative and structural surplus of control means of the quantity and the fuel consumption on board, e.g. when receiving information of the initial process from several gauges. One illustr., two biblio. refs.

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UDC 531.787.913

TISHECHKIN, YU. V., ~~TIKHOMIROV, YU. M.~~

"Piezoelectric Pressure Transducer"

USSR Author's Certificate No 239620, filed 1 Sep 65, published 6 Aug 69)
(from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 3, Mar 1970, Abstract No
3-32-734 P)

Translation: The proposed transducer differs in that its piezoelement is made with through radial cuts, converging to a central opening. This makes it possible to increase transducer sensitivity. Illustrations: 2.

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027
UNCLASSIFIED
PROCESSING DATE--11DEC70
TITLE--ULTRA HIGH FREQUENCY PLASMA MULTIPLIER WITH EXTERNAL IGNITION -U-
AUTHOR--(04)-BRANDT, A.A., REZNIKOV, I.I., BOVIN, S.V., TIKHOMIROV, YU.V.
COUNTRY OF INFO--USSR
SOURCE--VESTNIK MOSKOVSKOGO UNIV. FIZ. ASTRON. (USSR), NO. 2, P. 235-6
(1970)
DATE PUBLISHED--70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ULTRAHIGH FREQUENCY, PLASMA BEAM, FREQUENCY MULTIPLICATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO--FD70/605029/D02 STEP NO--UR/0188/70/000/002/0235/0236
AIRC ACCESSION NO--AP0141716
UNCLASSIFIED

2/2 027

CIRC ACCESSION NO--AP0141716

UNCLASSIFIED

PROCESSING DATE--11DEC70

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. RESULTS OF MEASUREMENTS OF
PARAMETERS OF A PLASMA FREQUENCY MULTIPLIER WITH AN EXTERNAL DIRECT
CURRENT IGNITION. THE OUTPUT POWER AND HARMONIC CONTENT ARE
INVESTIGATED.

UNCLASSIFIED

USSR

UDC 621.3.032.21

SELIVERSTOV, V. P., MEL'NIKOV, A. M., PLYUSHKOVA, V. S.,
TIKHOMIROVA, A. N., KUHIN, T. I. (Deceased), Department of
Electrochemical Production Processes, Ivanovo Institute of
Chemical Technology

"Fabrication of Brush-on-Type and Molded Copper Chloride Cathodes
for Magnesium Power Sources"

Ivanovo, *Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i
khimicheskaya tekhnologiya*, Vol 14, No 11, 1971, pp 1705-1708

Abstract: A new technique described is for making copper chloride-
base active mass for brush-on-type positive electrodes designed
for use in magnesium power sources as well as a method of fab-
ricating molded porous copper-chloride cathodes based on the
reduction of $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$ with a highly disperse dry copper powder.
The experimental data indicate that the presence of chemical
pure excess copper powder acts favorably on the efficiency of
power sources. The cell voltage is increased by 15-50 mv and the
activation period is decreased. The factors responsible for the

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SELIVERSTOV, V. P., et al, Izvestiya vysshikh uchebnykh zavedeniy.
Khimiya i Khimicheskaya tekhnologiya, Vol 14, No 11, 1971,
pp 1705-1708

improved cell characteristics, other than the higher conductivity of the active mass, is the much higher dispersion of the copper chloride produced by the dry method. The latter aspect is the basis for making of molded positive porous electrodes. The porosity of the finished electrodes is rated at 55.4 percent against 35.7 percent in factory-made molded electrodes with graphite. The load potential is about the same in both; the cell voltage, however, is considerably higher and more stable with time. The efficiency of copper chloride is 95 percent. The effective utilization of the anodic material is increased by 9 percent. The pickup w/hr capacity at discharge to 1.2 v is increased by 20 percent. A contributing factor is the lower solubility of copper chloride on the electrode in the presence of higher porosity as well as the higher concentration of chloride ions in the electrolyte causing anode activation.

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Coatings

USSR

UDC 621.793.3

VORONTSOV, YE. S., and ~~TIKHOMIROVA, D. N.~~ Voronezh Polytechnic Institute
"Production of Copper-Nickel Coatings by Reduction of Applied Oxide Layers
With Hydrogen"

Moscow, Zashchita Metallov, Vol 8, No 3, May-Jun 72, pp 345-347

Abstract: The authors studied the possibility of applying copper, nickel, and binary copper-nickel coatings to ferrous metals by the reduction of powdered oxide films with gaseous reactants, particularly hydrogen. In experiments steel specimens 6 mm in diameter and 25 mm long were stained with a dye made of powdered Cu_2O , NiO , and mixtures thereof in the form of an aqueous suspension or paste. The oxide layer thus applied was dried in air. Then the specimens were placed in a tube furnace, where the oxide layer was reduced with hydrogen. The thickness and uniformity of the covering metallic layer depend on the thickness and uniformity of the applied oxide layer. The density, porosity, and adhesion of the layer depend on the process temperature regime. At low temperatures the resultant layer is friable and porous and adheres poorly to the base. At relatively high temperatures the layer is rather dense and adheres well to the material of the specimen. The composition of

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VORONTSOV, YE. S., and TIKHOMIROVA, D. N., Zashchita Metallov, Vol 8, No 3,
May-Jun 72, pp 345-347

the layer and the degree of its homogeneity can be varied within wide limits. The consecutive application and reduction of various oxides makes it possible to obtain bimetallic and trimetallic coatings. The method is simple and requires no special equipment. The protective properties of the coatings are higher, the higher their nickel content. Reduction at 900° gives a coating with higher protective properties than at 800°.

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Composite Materials

USSR

UDC 669.71'782'3

FONSHTEYN, N. M., TIKHOMIROVA, G. N., KOTOV, V. F., and SHVARTS,
V. I.

"Tungsten Fibers As a Strengthenener for A Heat-Resisting Composite"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No
8, 1971, pp 11-14

Abstract: The authors studied characteristics of tungsten fibers which determine the possibility of their use as reinforcement in a heat-resisting nichrome-base composite. Wire specimens of so-called "non-sag" VA tungsten, 25-500 mm in diameter, were used for the study, as well as the tungsten alloys VAR-5 and VAM-5. To estimate the strengthening effect of the reinforcing fibers on the heat resistance of the composite, a determination was made of wire strength after the technological operations of the composite fabrication cycle. It was found that the short-time strength at 1100° C of "raw" and annealed 0.15-mm-diameter speci-

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FONSHTEYN, N. M., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 8, 1971, pp 11-14

mens of VA wire is 92 and 84 kg/mm², respectively. Prolonged exposure to elevated temperatures (800-1200° C) causes almost no change in the structure and mechanical properties of the investigated tungsten alloys. However, surface contact between tungsten and its alloys and nickel even at 800° C causes considerable loss of wire ductility and microhardness, and at 1200° C results in appreciable grain growth on the wire surface. High long-time heat resistance can be provided for a nichrome-base composite with tungsten strengthener by using special protective coatings to protect the reinforcement against the action of the matrix, as well as by changing the composition of the matrix and alloying the reinforcing material.

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UNCLASSIFIED
TITLE--POLAROGRAPHIC BEHAVIOR OF AZORIBITYLAMINE --U--
AUTHOR--(02)--TIKHOMIROVA, G.P., BELENKAVA, S.L.
COUNTRY OF INFO--USSR
SOURCE--UKR. KHIM. ZH. 1970, 36(5), 472-4
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--AZO COMPOUND, AMINE, DROPPING MERCURY ELECTRODE, POLAROGRAPHY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO-----FD70/605019/812 STEP NO--UR/0073/70/036/005/0472/0474
CIRC ACCESSION NO--AP0140911
UNCLASSIFIED

2/2 010
CIRC ACCESSION NO--AP0140911 UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. 2,4,5, (H(CHOH) SUB4 CH SUB2 NH) ME
SUB2 C SUB6 H SUB2 N SUB2 PH IS REDUCED AT A DROPPING HG ELECTRODE IN A
DIFFUSION CONTROLLED 2-ELECTRON PROCESS, PROBABLY TO A
DIPHENYLHYDRAZINE. IN ACETATE AND BRITTON-ROBINSON BUFFERS, THE HEIGHT
OF THE POLAROGRAPHIC WAVE INCREASES AND SHIFTS TO LESS NEG. POTENTIALS
WITH DECREASE IN PH. IT IS POSSIBLE TO DET. AZORIBITYLAMINE IN THESE
BUFFERS AT ABOUT PH 3-5. FACILITY: UKR. NAUCH.-ISSLED. INST.
PISHCH. PROM., KHARKOV, USSR.

UNCLASSIFIED

USSR

UDC 543.544: (546.799+546.65)

GUSEVA, L. I., and TIKHOMIROVA, G. S.

"The Problem of the Separation of Transplutonium and Rare-Earth Elements on an Anion Exchange Resin by Means of Concentrated LiCl Solutions in the Presence of Alcohols"

Leningrad, Radiokhimiya, Vol 12, No 5, 1970, pp 771-774

Abstract: A study was carried out on the sorption of Americium and Europium on an anion exchange resin in a wide range of LiCl (0.6-13.86 N) and alcohol (0-60%) concentrations, in order to elucidate the possibility of group separation of transplutonium and rare-earth elements in LiCl concentrations $\leq 10N$ at room temperature. It was found that in 4N HCl solution with 60% alcohol, less than 10% of Am and Eu is eluted with a separation coefficient of 2.5, while the remainder is adsorbed. A similar phenomenon is observed in case of 0.6-2 N LiCl solution in the presence of $\geq 80\%$ ethanol. In 6-12 N LiCl solution a real difference in distribution coefficients is observed for Am and Eu, depending on the alcohol content in the solution. The distribution coefficient Am/Eu is 51 in 8 N LiCl with 40% ethanol at room temperature, i.e., much higher than at elevated temperatures, as per the literature data.

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UNCLASSIFIED
TITLE--DIRECT COPPERING OF ALUMINUM AND ALUMINUM BASED ALLOYS -U-
PROCESSING DATE--30OCT70
AUTHOR--(104)--LUKCHSKIY, YU.YA., ALEKSANDROVA, A.N., TIKHOMIROVA, G.S.,
KUPTEVA, K.V.
COUNTRY OF INFO--USSR
SOURCE--KIEV, TEKHNLOGIYA I ORGANIZATSIYA PROIZVODSTVA, NO 1, 1970, PP
73-75
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--ALUMINUM ALLOY, ALUMINUM BASE ALLOY, BIBLIOGRAPHY, COPPER
PLATING, METAL COATING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REL/FRAME--1999/1331
CIRC ACCESSION NU--AP0123289
STEP NU--UR/0418/70/000/001/0073/0075
UNCLASSIFIED

"APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R002203310010-9

CIRC ACCESSION NO—AP0123289
ABSTRACT/EXTRACT—(U) GP-0-

UNCLASSIFIED

PROCESSING DATE—30OCT70

ABSTRACT. PRACTICAL RECOMMENDATIONS ARE
GIVEN FOR DIRECT COPPERING OF ALUMINUM AND ALUMINUM BASED ALLOYS.
REASONS FOR POSSIBLE SPOILAGE ARE INDICATED AND MEANS FOR THEIR
ELIMINATION ARE GIVEN.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R002203310010-9"

USSR

Adsorption

UDC: 621.9-496:532.546:546.284

KROTIKOV, V. A., TIKHOMOLOVA, K. P., KHARITONOV, N. P., and DENISOVA, N. A.,
Institute of Chemistry of Silicates imeni I. V. Grebenshchikov, Leningrad, Academy
of Sciences USSR, and Leningrad State University imeni A. A. Zhdanov, Leningrad,
Ministry of Higher and Secondary Specialized Education RSFSR

"Preparation of Rigid, Chemically Resistant Porous Bodies on the Basis of the Sys-
tem Polyorganosiloxane-Quartz"

Leningrad, Zhurnal Prikladnoy Khimii, Vol 43, No 6, Jun 70, pp 1229-1234

Abstract: Rigid, chemically inert diaphragms are essential for the study of
phenomena involving liquid flow through fine pores. The material of the diaphragms
must be rigid to preclude displacement of parts of the diaphragm under the effect
of liquid flow. Cylindrical diaphragms that fulfill this condition were prepared
from quartz powder and organosilicon lacquer KO-815 (GOST 11066-64). Quartz powder
with particle diameters of 16-44, 44-52, or 52-75 μ was combined with the polyor-
ganosiloxane in a ratio of 9:1 by weight, using a toluene solution of the polymer.
On evaporation of the toluene, the mixture was subjected to cold pressing in a mold
(2000 kg/cm² for 10 min for a cylinder with a diameter of 30 mm and height of
90-120 mm). The diaphragm was then kept at 280° for 3 hrs and calcined at 550° for

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KROTIKOV, V. A., et al, Zhurnal Prikladnoy Khimii, Vol 43, No 6, Jun 70, pp 1229-1234

24-72 hrs. KO-815 (polyphenylsiloxane with a branched structure) decomposed during the thermal treatment, forming SiO_2 that cemented together the quartz. The total porosity of the diaphragms was 20-30%. The mean pore radius, which increased with the quartz particle size and with the length of the time of calcination, ranged from 2.7 μ (quartz particle size 16-44 μ , 48 hrs at 550°) to 6.1 μ (quartz particle size 52-75 μ , 72 hrs at 550°). The diaphragms were chemically stable to prolonged boiling in 0.01 N solutions of KCl and HCl. Comparison of the electrokinetic characteristics (zeta potential and the coefficient of effectiveness α in KCl solutions) of the diaphragms and powdered quartz showed that SiO_2 derived from KO-815 covered the quartz particles in the form of a dense layer² and that the surface of this layer had a structure different from that of quartz.

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Thermomechanical Treatment

UDC: 669.14:621.787

TUSHINSKIY, L. I., TUSHINSKAYA, K. I., ~~TIZHOMIROVA, L. B.~~ and KULIKOV, I. L.,
Novosibirsk Institute of Railroad Transportation Engineers

"Thermomechanical Treatment of Carbon Steel With Diffusion Transformation of Austenite"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 8, 70,
pp. 116-118

Abstract: This paper concerns the thermomechanical treatment of carbon steel with diffusion transformation of austenite to finely disperse pearlite. It was found that austenite deformation makes it possible to raise the austenization temperature to a level which increases both the yield point and tensile strength to 14 to 18 and 18--20 kg/mm², respectively, without reduction in plasticity. Comparison of treatment specifications shows that a lamellar structure, as opposed to a granular structure, has a higher tensile strength (by 20 kg/mm²) at somewhat higher plasticity values. Figures in the original article show the effect of the cooling rate, temperature, and extent of deformation on the mechanical properties of USA steel subjected to high-temperature thermomechanical treatment with diffusion transformation, the mechanical properties of USA steel with granular and lamellar structures, and the effect of austenization temperature and austenite deformation on the dimension of a troostite colony of treated USA steel.

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USSR

UDC 669.15⁴74-194:669.14.018.27

TUSHINSKIY, L. I., TIKHOMIROVA, L. B., and MURATOV, V. M., Novosibirsk
Electrical Engineering Institute

"Deformation Aging of 65G Steel Hardened by Thermomechanical Working"
Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 9, 1970,
pp 67-68

Abstract: A study was made of deformation aging (DA) of 65G steel after thermomechanical working. Deformation aging of 65G steel should be performed in combination with isothermal austenitic conversion, since the yield point is increased by 27 kg/mm² (18%) with a slight decrease in plasticity. The optimal mode of deformation aging of 65G steel is deformation (3%) and aging at 250°C.

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USSR

Thermomechanical Treatment

UDC 669.14.018.298:539.4

TIKHOMIROVA, L. B. and ARTEM'YEV, A. P., Novosibirsk Electrical Engineering Institute

"Increasing the Structural Strength of Carbonaceous Steel by Thermomechanical Treatment"

Moscow, Izvestiya VUZ, Chernaya Metallurgiya, No 10, 1973, pp 120-122

Abstract: High-temperature thermomechanical treatment with diffusion conversion of the austenite leads to an increase in the indicators of the structural strength of U8 steel. As the criteria of structural strength the authors determined the critical opening in the mouth of the crack, the number of cycles prior to fracture with a sign-variable load and deflection under static bending. The optimal rate of cooling after hot deformation of the austenite is 30-35 deg/sec which ensures an interplate distance of 650-700 Å. This method makes it possible to have better indicators of ductile fracture at higher indicators of strength.

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USSR

TIKHOMIROVA, L. B., and ARTEM'YEV, A. P., Izvestiya VUZ, Chernaya Metallurgiya, No 10, 1973, pp 120-122

The following conclusions are made by the authors:

1. Thermomechanical treatment of U8 carbonaceous steel with diffusion conversion of supercooled austenite permits obtaining a good group of properties for the structural strength at a cooling rate that ensures creation of an interplate spacing in the perlite of approximately 700 Å.
2. The increased group of mechanical properties is created by a special substructure which is formed by hot deformation in austenite and then inherited (with partial transformation) by the ferrite along with obtaining an optimal interplate spacing in the final structure.

Figure 1 illustrates the influence of cooling rate on interplate spacing in U8 steel; Figure 2 shows the change in strength and fracture ductility.

The article contains 2 illustrations and 1 bibliographic reference.

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USSR

UDC 669.15-194:669.74-15:539.389.3

TUSHINSKIY, L. I., TIKHOMIROVA, L. B., and MURATOV, V. M.,
Novosibirsk Electro-technical Institute

"Precipitation Hardening of 65G Steel "

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Chernaya
Metallurgiya, No 2, 1970, pp 121-122

Translation: The article presents results of precipitation
hardening of 65G steel after austempering and temper hardening.
It was established that precipitation hardening 65G steel is
expedient after austempering inasmuch as the yield point in
this case increases by 16 to 18% while reduction of ductility
is negligible.

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UNCLASSIFIED

PROCESSING DATE--20NOV70

EFFECT OF TESTOSTERONE PROPIONATE ON THE MOBILITY OF NEURAL
PROCESSES IN DOGS WITH DIFFERENT TYPES OF NERVOUS SYSTEMS AFTER
AUTHOR--(G2)--TIKHOMIROVA, L.D., TROSHKIN, V.A.

COUNTRY OF INFO--USSR

SOURCE--FIZICL. ZH. (KIEV) 1970, 16(1), 113-15

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--REPRODUCTIVE SYSTEM, SURGERY, NERVOUS SYSTEM, TESTOSTERONE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0657

CIRC ACCESSION NO--AP0131262

STEP NO--UR/0238/70/016/001/0113/0115

UNCLASSIFIED

022
CIRC ACCESSION NO--AP0131262 UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EFFECT OF EXOGENOUS TESTOSTERONE
PROPIONATE (I), ON BASIC NERVOUS PROCESSES, DECREASED IN CASTRATED DOGS
WITH TIME. COMPENSATION THERAPY WITH I IN CASTRATED DOGS WITH STRONG
AND WEAK NERVOUS EXCITABILITY HAD NO EFFECT ON THE BASIC NERVOUS
PROCESSES.
USSR. FACILITY: INST. FIZIOL. IM. BGGOMOL'TSYA, KIEV,
PROCESSING DATE--20NOV70

UNCLASSIFIED

Acc. Nr:

AP0045620

Ref. Code: UR 0463

PRIMARY SOURCE: Molekulyarnaya Biologiya, 1970, Vol 4, Nr 1,
pp 129-136

INFLUENCE OF BUdR INCORPORATION INTO S_d PHAGE DNA
ON THE LETHAL AND MUTAGENIC EFFECTS OF UV-IRRADIATION

L. P. TIKHOMIROVA

Institute of Molecular Biology, Academy of Sciences, USSR, Moscow

When thymine in the DNA was substituted by BUdR lethal and mutagenic effects of UV-light on the virulent phage S_d were studied. Premutational lesions of this phage are not repaired by the host cells (*E. coli* CK). It was found that almost complete substitution results in a high UV-sensitivity of the phage. Neither UV-initiated mutagenic effect nor UV-induced mutation spectrum were affected, however maximum of the UV-induced mutations of the BUdR-phage was significantly shifted to greater lethality. On the basis of the results obtained as well as literature data it is concluded that in some other systems (bacteria, temperate phages) the enhancement of mutagenic effect of UV-irradiation is due to inhibition of the repairing of premutational lesions in BUdR-DNA, BUdR-photoproducts being not mutagenic.

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19780597

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USSR

UDC 547.963.3

TIKHOMIROVA, L. P., Institute of Molecular Biology, Academy of Sciences USSR

"The Effect of Incorporating 5-Bromodesoxyuridine Into S_d Phage DNA on the Lethal and Mutagenic Effects of UV-Irradiation"

Moscow, Molekulyarnaya Biologiya, No 1, 1970, pp 129-136

Abstract: The effects of UV-irradiation were studied when thymine was replaced with 5-bromodesoxyuridine (BD) in the DNA of the virulent S_d phage, whose premutation lesions were not repaired by the host cell, E. coli CK. The phage's sensitivity to UV-irradiation was intensified after the substitution. The mutagenic effect of the UV-irradiation and the spectrum of the UV-induced mutations were not affected, but the peak of the UV-induced mutagenesis of phage containing BD shifted to the region of greater lethality. The results of the experiments show that BD-photoproducts are not the source of mutations in a system where premutation lesions are not repaired. Therefore, the observed intensification of the mutagenic effect of UV-irradiation following the incorporation of BD in phage and (bacterial) DNA is due wholly to suppression of the mechanisms of repair in the BD DNA.

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Radiobiology

USSR

UDC 577.391:546.185'.13:546.171.2

TIKHOMIROVA, M. V., YAKOVLEV, V. G., and KLIMOVA, R. A., Institute of Biophysics, Ministry of Health USSR, Moscow

"The Radiation-Protective Activity of Diammonium Amidothiophosphate"

Moscow, Radiobiologiya, Vol 11, No 4, Jul/Aug 71, pp 533-536

Abstract: In experiments on mice and rats, diammonium amidothiophosphate (I) exerted a pronounced prophylactic effect when administered 10-20 min before irradiation with gamma-rays at a high dosage. The radiation doses applied were 800-1000 r for mice and 850 r for rats at a dosage of 483-558 r/min. The effective dose of I was 10 mg/kg for mice and 20-30 mg/kg for rats. The LD₅₀ of I for mice on intraperitoneal administration was 13 mg/kg. Study of spleen preparations showed that I was effective in expediting the restoration of hemopoiesis when administered before irradiation to mice. In experiments on dogs that were irradiated with a dose of 420 r, I on intravenous administration had a protective effect in a dose of 5 mg/kg, but was ineffective in doses of 3 and 4 mg/kg. However, I in a dose of 5 mg/kg was highly toxic to dogs; two of six non-irradiated control dogs treated with I in this dose died.

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1/2 028 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--INFLUENCE OF THE DOSE RATE OF GAMMA IRRADIATION ON THE
RADIOPROTECTIVE EFFECTIVENESS OF BETA, MERCAPTOETHYLAMINE HYDROGEN
AUTHOR--(02)--~~NIKHO~~MIROVA, M.V., YAKOVLEV, V.G.
COUNTRY OF INFO--USSR
SOURCE--RADIOBIOLOGIYA 1970, 10(1), 132-5
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--GAMMA RADIATION, RADIATION BIOLOGIC EFFECT, ANTIRADIATION
DRUG, DOSE RATE, COBALT ISOTOPE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3001/1852 STEP NO--UR/0205/70/010/001/0132/0135
CIRC ACCESSION NO--AP0127262
UNCLASSIFIED

2/2 028

CIRC ACCESSION NO--AP0127262
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT. ADULT MICE AND RATS WERE GAMMA
IRRADIATED (PRIME60 CO) AT 160-720 R-MIN FOR A SHORT TIME OR AT
0.28-3.67 R-MIN FOR A LONG (5-96 HR) TIME. WITH PROLONGED IRRADN. AT
LOW DOSES, IRRADN. WAS INTERRUPTED 1-2 TIMES DAILY FOR 20-30 MIN. TO
PART OF THE ANIMALS WAS INTRODUCED PER OS, I.V., OR I.P., 10PERCENT AQ.
BETA, MERCAPTOETHYLAMINE H TARTRATE (I), 30-40 MIN BEFORE THE IRRADN.
WITH SHORT DURATION OF GAMMA IRRADN. AND HIGH DOSES OF I, SURVIVAL RATE
WAS VERY HIGH. HOWEVER, NO RADIOPROTECTIVE EFFECTIVENESS OF I WAS OBSD.
DURING PROLONGED IRRADN.

FACILITY: INST. BIOFIZ., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 546.65 + 547.26'118

OSTAPKEVICH, N. A., and ~~TIKHOMIROVA, N. G.~~ Leningrad Chemical-Pharmaceutical
Institute, Chair of Inorganic Chemistry

"Dealkylation of Dialkylphosphorous Acids"

Ivanovo, Khimiya i Khimicheskaya Tekhnologiya, Vol 15, No 3, 1972, pp 455-456

Abstract: Kinetics of the dealkylation reaction of dialkylphosphorous acids in presence of rare earth salts was studied. The dealkylation process is affected by temperature and the structure of the ether group radicals. At 120° in 10 min one ether group is completely split off in diethylphosphite, in dipropylphosphite - to the extent of 80%, and in case of dibutylphosphite - only by 47-60%. To increase the yield of neocidium monoalkylphosphites, the experiments were carried out at 120-160°. Rate constants and activation energies of the dealkylation reaction were determined at 50, 90, and 120°C.

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USSR

UDC 546.65 + 547.26'.118

OSTAPKEVICH, N. A., and TIKHOMIROVA, N. G., Leningrad Chemical-Pharmaceutical
Institute, Chair of Inorganic Chemistry

"Reaction of Neodinium Chloride With Dialkylphosphorous Acids"

Ivanovo, Khimiya i Khimicheskaya Tekhnologiya, Vol 15, No 3, 1972, pp 384-386

Abstract: A study was carried out on the complex formation of dialkylphosphorous acids (DPA) with rare earth elements (REE). It was established that at 20°C an equilibrium is reached in the system DPA:NdCl_3 in 90-95 minutes with a molar ratio 4:1. Infrared spectra of NdCl_3 solutions in DPA were studied. On the basis of the absence of characteristic absorption bands of DPA in saturated solutions of NdCl_3 in DPA and the shift of characteristic $\Delta\nu_{\text{P=O}}$ frequency towards lower wavelength the authors proposed that a complex has formed in the saturated solution with the formula $[(\text{RO})_2\text{P}(\text{O})\text{H}]_4 \cdot \text{NdCl}_3$.

USSR

UDC 546.65+547.26+118

TIKHOMIROVA, N. G., OSTAPKEVICH, N. A., Leningrad Chemical-Pharmaceutical
Institute

"Synthesis of Monoalkyl Phosphites of Rare Earth Elements"

Leningrad, Zhurnal Obshchei Khimii, Vol 40, No 6, Jun 70, p 1422

Abstract: It was found that dialkyl phosphites are dealkylated by lanthanum and cerium chlorides. The products are crystalline substances which are poorly soluble in water and organic solvents. On heating to 480° no decomposition or melting is observed.

1/1

USSR

UDC 678.742.4:66.018.86

TIKHOMIROVA, N. S., BOL'SHAKOV, N. I., SERENKOV, V. I.

"Effect of Additives on the Radiation Decomposition of Polyisobutylene"

Moscow, Plasticheskiye Massy, No 1, 1973, pp 18-19

Abstract: A study was made of the effect of certain organic additives on the decomposition of polyisobutylene under the effect of cobalt radiation in the presence of oxygen. Aromatic compounds with conjugated rings, phenols and aromatic thio-compounds in the form of especially pure reagents and chemically pure compounds were used as the additives.

On irradiation of polyisobutylene with effective additives (azobenzene, α -dinitrophenol and p-aminophenol) their protective effect varies as a function of the absorbed dose. With an irradiation dose of one mrad, the effectiveness of protecting the polyisobutylene is maximal, and with a further increase in the dose to 3 mrad the protection becomes weaker. The effect of the various investigated additives on radiolysis of polyisobutylene was analyzed leading to the following groupings: phenols (ionol, p-aminophenol, α -dinitrophenol) and azobenzene which protect the polymer chains from breaking in the presence of irradiation. Their protective functions are connected with deactivation of the active radiolysis products.

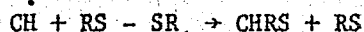
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USSR

TIKHOMIROVA, N. S., et al., Plasticheskiye Massy, No 1, 1973, pp 18-19

Captax and altax. These additives promote radiation decomposition of polyisobutylene (under the effect of irradiation in the absence of oxygen of the air).

Mercaptans (RSH) and disulfides (RS-SR) are compounds which easily participate in the reaction of the chain transfer:



p-aminophenol and diphenylthiourea. These compounds actively affect the process of radiation-oxidation decomposition of polyisobutylene, suppressing them significantly at comparatively low concentrations (up to 1% by weight).

2/2

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1/2 029 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--REACTION OF MOLTEN GALLIUM WITH COPPER -U-
AUTHOR--TIKHOMIROVA, O.I., PIKUNOV, M.V., RUZINOV, L.P., MARCHUKOVA, I.D.
COUNTRY OF INFO--USSR
SOURCE--FIZ. KHIM. MEKH. MATER. 1970, 5(6), 699-703
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--COPPER ALLOY, GALLIUM ALLOY, LIQUID METAL, INTERMETALLIC
COMPOUND, CHEMICAL REACTION, COPPER POWDER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1988/0624 STEP NO--UR/0369/70/005/006/0699/0703
CIRC ACCESSION NO--AP0105603
UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0105603

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE MECHANISM OF THE REACTION OF LIQ. GA WITH POWD. CU AT 100DEGREES IS STUDIED. ON THE BASIS OF THE INVESTIGATION OF THE CHARACTERISTICS OF THE GROWTH OF THE THETA PHASE (CUGA SUB2). THE METHOD OF CALC. OF THE AV. EFFECTIVE THICKNESS OF THE LAYER OF THE INTERMETALLIC PHASE IS WORKED OUT. IT IS ESTABLISHED THAT THE GROWTH OF THE THETA PHASE, ARISING AS THE RESULT OF THE REACTION OF LIQ. GA WITH POWD. CU CONFORMS TO A PARABOLIC RELATION.

UNCLASSIFIED

USSR

UDC 678.06-419.8:677.521/.01:53

KIRILLOV, V. N., YEFIMOV, V. A., KOZIN, V. I., ABLEKOVA, Z. P.,
KRASNOV, L. L., TIKHOMIROVA, R. S.

"Effect of Fillers on the Thermophysical Properties of Fiberglass
Plastics"

Moscow, Plasticheskiye Massy, No 11, Nov 70, pp 38-40

Abstract: The authors investigate the effect which chemical composition and heat treatment of the filler have on the thermophysical properties of fiberglass plastics at 50-300°C. The plastics studied were based on phenol-furfural or organosilicon binders, and fillers comprised of silica or aluminoborosilicate fabric with a paraffin lubricant. It was found that the behavior of the thermophysical characteristics of fiberglass plastics as the temperature changes depends on the processes which take place in the filler. In materials based on aluminoborosilicate fiber, oxidation of the lubricant determines the change in thermophysical properties with temperature, while the determining factor in plastics based on silica fabric is evaporation of the moisture absorbed by the fibers. Heat treatment of silica fabric is an effective measure for reducing shrinkage of plastics based on this filler.

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USSR

UDC: 620.17.171

KONONCHUK, N. I., AKIMOV, L. M., VASIL'YEV, B. N., LAPITSKIY, Yu. A.,
BELYAYEV, M. S., BICHUTSKAYA, O. V., KOPYLOV, A. A., TIKHOMIROVA, V. A.,
Moscow

"Study and Evaluation of the Kinetics of Fatigue Rupture of Heat-Resistant Alloys"

Kiev, Problemy Prochnosti, No 11, 1970, pp 19-23

Abstract: The results of an investigation of the fatigue resistance of heat-resistant alloys with symmetrical and asymmetrical loading cycles show significant and varied sensitivity to asymmetry in the loading cycle, depending on the type of alloy and test mode (temperature, number of loading cycles, etc.). This paper studies the kinetics of the development of fatigue cracks in heat-resistant alloy on the basis of the actual endurance characteristics with symmetrical and asymmetrical loading cycles. The process of specimen rupture was divided into two stages: the stationary stage before formation of the main crack and the nonstationary stage of development of the main crack to a certain depth, for example 10% of the

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USSR

KONCHUK, N. I., AKIMOV, L. M., VASIL'YEV, B. N., LAPITSKIY, Yu. A.,
BELYAYEV, M. S., BICHUTSKAYA, O. V., KOPYLOV, A. A., TIKHOMIROVA, V. A.,
Moscow, Kiev, Problemy Prochnosti, No 11, 1970, pp 19-23

specimen thickness. A formula is produced for the "viability factor" which, in combination with calculation of the values of Δt_i and t_{tr} , can describe the kinetics of development of fatigue cracks in various alloys. This factor expresses the sensitivity of the alloy to the development of the fatigue crack on the basis of the experimental characteristics of endurance of real alloys.

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USSR

UDC 547.963.3

PYAYVINEN, E. A., and TIKHOMIROVA-SIDOROVA, N. A., Institute of Macromolecular Compounds, Academy of Sciences USSR

"Selective 4-N-Acetylation of 2'-Desoxycytidine-5' Phosphate"

Leningrad, Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 2076-2079

Abstract: An attempt is described to apply the Michelson method to the selective N-acetylation of adenosine-2'(3') phosphate, cytidine-2'(3') phosphate (Cp), cytidine-5' phosphate (pC), desoxycytidine-5' phosphate (dpC) and cytidine. The reaction mixtures were analyzed by paper chromatography in an ethanol-1 M NH_4Cl system, pH 7.5 (7:3). Use was made of the experimental data to determine the conditions for selective quantitative acetylation of desoxycytidine-5' phosphate at the 4-amino group. The dominant role in phosphate acetylation reactions is attributed to the nature of the solvent, the nucleotide structure, i.e., the position of the phosphorus radical, the presence or absence of the 2'-hydroxyl group and the phosphorus-ester bond. All these factors appear to stimulate the selective acetylation of the amino group of the heterocyclic nucleus.

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USSR

UDC 615.281.8:547.963.32

3

AKSENOV, O. A., TIMKOVSKIY, A. L., AGEYEVA, O. N., KOGAN, E. M., BRESLER, S. Ye., SMORODINTSEV, Al. A., and TIKHOMIROVA-SIDOROVA, N. S., All-Union Scientific Research Influenza Institute, Ministry of Public Health USSR, Institute of Nuclear Physics, Academy of Sciences USSR, and Institute of High Molecular Weight Compounds, Academy of Sciences USSR, Leningrad

"Interferonogenic and Antiviral Activity of Double-Stranded Polyriboguanilic and Polyribocytidylic Acid Complex"

Moscow, Voprosy Virusologii, No 3, May/Jun 1973, pp 345-350

Abstract: The interferonogenic and antiviral activity and toxicity of (poly-G)·(poly-C) complexes produced by two methods were compared with those of (poly-I)·(poly-C). Stable complexes were formed both by adding NaCl (0.1M) to an equimolar solution of poly-G and poly-C in 0.005M sodium phosphate buffer (pH 7.4) at 20°C, and by heating the polynucleotide mixture in the same buffer for 10 min at 100°C with subsequent slow cooling. Success of the first method, not encountered in other papers, is probably due to careful purification of the polynucleotides. The double-strand complex stimulated maximum interferon formation in white mice 2-4 hours after intravenous injection. Interferon disappeared after 10-12 hours.

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USSR

AKSENOV, O. A., et al., Voprosy Virusologii, No 3, May/Jun 1973, pp 345-350

(Poly-G)·(poly-C) produced less interferon than did (poly-I)·(poly-C) (160-320 vs. 640-1,280 units/ml). The complex protected mice from lethal doses of AO/PRg influenza virus, though (poly-I)·(poly-C) was somewhat more effective. (Poly-G)·(poly-C) was most effective when administered within 1 day of infection, while (poly-I)·(poly-C) was most effective when administered 2-3 days prior to the virus. The protective effect was higher for complex produced at 20°C than for that produced at 100°C. (Poly-G)·(poly-C) was nontoxic to white mice even at maximum dose (50 mg/kg), while (poly-I)·(poly-C) was 50 percent lethal at 10-15 mg/kg. Though (poly-G)·(poly-C) was found to be generally less effective than (poly-I)·(poly-C), its lower toxicity makes it a preferable antiviral agent.

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- 18 -

USSR

UDC 615.281.8:547.963.32

(2)
TIMKOVSKIY, A. L., AKSENOV, O. A., BRESLER, S. Ye., KOGAN, E. M., SMORODINTSEV, Al. A., and TIKHOMIROVA-SIDOROVA, N. S., Institute of Nuclear Physics, Academy of Sciences USSR, Institute of High Molecular Weight Compounds, Academy of Sciences USSR, and All-Union Scientific Research Influenza Institute, Ministry of Public Health USSR, Leningrad

"Molecular Weight Characteristics of the Polyriboguanilic-Polyribocytidylic Acid Complex and Their Relation to Antiviral and Interferonogenic Activity"

Moscow, Voprosy Virusologii, No 3, May/Jun 1973, pp 350-355

Abstract: Molecular weight characteristics and immunological activity of (poly-G)·(poly-C) were studied in comparison to those of (poly-I)·(poly-C) to determine the reasons for variations in the compound's immunological activity. It was found through gel chromatography that the molecular weight of the complex depended directly on the quantity of oligonucleotide impurities within either of the precursors, poly-G acid or poly-C acid. While impure precursors produce a complex with molecular weight 300,000-500,000 daltons, purification of both results in molecular weight close to that of (poly-I)·(poly-C) (over $1 \cdot 10^6$ daltons). Antiviral activity of the purified complex in white mice was practically identical to that of 1/2

(2)

USSR

TIMKOVSKIY, A. L., et al., Voprosy Virusologii, No 3, May/Jun 1973, pp 350-355

(poly-I)·(poly-C). Activity also depended directly on precursor molecular weight, disappearing at 30,000-40,000 daltons. It is suggested that molecular weight is more important than nucleotide composition to antiviral and interferonogenic activity. Thus although the mechanism of action of both complexes remains to be clarified, apparently it is identical for both and depends directly on complex molecular weight and precursor purity.

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- 19 -

USSR

SILIN, V. P.; TIKHONCHUK, V. T. (Moscow)

"A Relaxation Theory for the Temperature of an Electron-Ion Plasma Occurring in High-Frequency Electrical and Constant Magnetic Fields"

Novosibirsk, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki; November-December, 1970; pp 41-8

ABSTRACT: The authors determined the effective electron-ion collision frequency leading to the equalization of temperatures in plasmas occurring in constant magnetic and weak, high-frequency electrical fields under conditions in which the gyroscopic radius of the electrons is found to be less than the Debye shielding radius. The corresponding values of the relaxation time for a wide range of ratios of the electron and ion temperatures and a wide range of values of the magnetic and electrical fields, as well as the frequency of the external electrical field, were determined.

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USSR

SILIN, V. P., et al. Novosibirsk, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, November-December, 1970, pp 41-8

Equalization of the electron and ion temperatures of a plasma in a strong, constant magnetic field when the Debye shielding radius is found to be greater than the gyroscopic radius of the particles was studied by V. P. Silin and G. P. Chernyy ("Relaxation of Electron and Ion Temperatures of a Plasma Occurring in a Strong Magnetic Field", ZhETF, 1962, Vol. 43, No. 5; "A Theory for the Relaxation of Electron and Ion Temperatures of a Plasma Occurring in a Strong Magnetic Field", Zh. Tekh. Fiz., 1969, Vol. 39, No. 5). A kinetic equation with an integral of the collisions determining the effect of a magnetic field on the motion of the colliding particles (V. P. Silin, "Kinetic Equation for Rapidly Changing Processes", ZhETF, 1960, Vol. 38, No. 6) provided the basis of these works.

This paper concerns the problem of determining the effect of a high-frequency electrical field on the relaxation time of the temperature of a magnetized plasma. As Silin et al showed in their paper "Parametric Resonance in a Plasma Occurring in a Magnetic Field" (ZhETF, 1966, Vol. 50, No. 4), in a magnetized plasma a variation of the increasing oscillations in a strong, high-frequency electrical field is possible; therefore, electrical fields in which the drift velocity of the particles becomes greater than their thermal velocity are not considered in this paper.

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1/2 018
UNCLASSIFIED
PROCESSING DATE--02OCT70
TITLE--OBTAINING OF AND SOME PROPERTIES OF VIRULENT MUTANTS OF TEMPERATE
PHAGES OF A POLYLYSOGENIC PROACTINOMYCES (NOCARDIA) FRUCTIFERI -U-
AUTHOR--(05)-RAUTENSHTEYN, YA.I., TIKHONENKO, A.S., SOLOVYEVA, N.YA.,
BELYAYEVA, N.N., FILATOVA, A.D.
COUNTRY OF INFO--USSR
SOURCE--IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA, 1970, NR 2,
PP 272-282
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--PHAGE, ACTINOMYCES, ANTIBIOTIC, MICROORGANISM MUTATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1990/1376
STEP NO--UR/0216/70/000/002/0272/0282
CIRC ACCESSION NO--AP0109450
UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109450

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT.

THE PROACTINOMYCES (NOCARDIA) FRUCTIFERI 5339 CULTURE PROVED TO BE POLYLYSOGENIC. ALL THE TEMPERATE PHAGES PRESENT IN THIS CULTURE HAVE SHOWN HIGH SENSITIVITY TO THE ANTIBIOTIC RUBOMYCIN. AT A CONCENTRATION OF 140 GAMMA-ML OF A RUBOMYCIN A 100PERCENT INACTIVATION OF ALL THE PHAGE PARTICLES TAKES PLACE. TREATMENT WITH THIS ANTIBIOTIC AT CONCENTRATIONS EQUAL TO 0.25-20 GAMMA-ML ON FREE PHAGE PARTICLES OF THE EXPERIMENTAL CULTURE AND TREATMENT OF THE LYSOGENIC CULTURE WITH CONCENTRATIONS OF 0.15-100 GAMMA-ML CAUSED THE APPEARANCE OF VIRULENT MUTANTS, ABLE TO LYSE THE HOST CULTURE. SPONTANEOUS FORMATION OF VIRULENT MUTANTS WAS OBSERVED AS WELL. COMPARATIVE INVESTIGATION OF THE VIRULENT MUTANTS SHOWED THAT JUDGING BY THE MORPHOLOGY OF THE NEGATIVE COLONIES THEY MAY BE SUBDIVIDED INTO SIX TYPES WHEREAS ACCORDING TO THE SPECTRA OF LYTIC ACTION, ANTIGENIC PROPERTIES AND PHAGE MORPHOLOGY THEY FALL INTO THREE DISTINCT TYPES. THE PHAGES OF THE SAME SEROTYPE ARE IDENTICAL AS TO THE MORPHOLOGY OF THE PARTICLES. ON THE OTHER HAND IN SOME CASES VIRULENT MUTANTS BELONGING TO THE SAME SEROTYPE MAY DIFFER AMONG THEMSELVES WITH RESPECT TO NEGATIVE COLONIES MORPHOLOGY AND THE LYTYC SPECTRUM CHARACTERISTICS. THE FINE STRUCTURE AND SIZE OF VIRULENT MUTANTS PARTICLES ARE DESCRIBED ON THE BASIS OF RESPECTIVE ELECTRON MICROPHOTOGRAPHS.

FACILITY:

INSTITUTE OF MICROBIOLOGY, ACADEMY OF SCIENCES USSR.

FACILITY:

INSTITUTE OF MOLECULAR BIOLOGY

UNCLASSIFIED

USSR

UDC 576.858.9(T2).093.396.07

KALININ, V. N., SURKOV, V. V., and TIKHOMENKO, T. I., Institute of Virology
imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, and Chair of
Virology, Biology and Soil, Faculty Moscow State University

"Isolation, Purification, and Concentration of Internal T2 Bacteriophage
Protein"

Moscow, Voprosy Meditsinskoy Khimii, Vol 17, No 4, 1972, pp 422-426

Abstract: Two methods were employed to isolate and purify internal T2 bacterio-
phage protein. The 1st employed chromatography on phosphorylated cellulose.
Ultraviolet absorption spectra of the proteins obtained indicated contamination
by DNA. Proteins were also contaminated with phosphocellulose degraded by the
alkaline buffer with which the proteins were eluted. Because these contaminants
could not be removed, another method was tried, employing electrophoresis in
polyacrylamide gel with a homemade instrument. After 18 hours of electrophor-
esis, the resulting protein had a typical protein absorption spectrum. The
protein appeared as 2 fractions, both with a sedimentation constant of 1.34S.
Whether or not these are two different proteins is not known. Protein obtained
by the second method is fully usable for physicochemical and biological
research.

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USSR

AGOL, V. I., ATABEKOV, I. G., KRYLOV, V. N., and TIKHONENKO, T. I., Molekularnaya Biologiya Virusov, (Molecular Biology of Viruses), Moscow, "Nauka," 1971, 493 pp

Annotation: This book is in the form of a monography devoted to molecular biology and the molecular genetics of viruses. It correlates contemporary achievements in the study of biochemistry and the ultrafine structure of viruses and discusses in detail the chemical composition of viruses, the chemistry of viral proteins and nucleic acids, as well as other constituents, including enzymes. A detailed examination is also made of the diverse and complex problem of the interaction of viruses and proteins. Special attention in the book is paid to the genetics of viruses.

The book is intended for scientific workers in various fields: virologists, biochemists, microbiologists, biologists, medical and veterinary workers and those employed in agriculture, as well as a guide for senior biology students in university departments and medical institutes.

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AGOL, V. I., Molecular Biology of Viruses, Moscow, "Nauka," 1971, 493 pp

4. KRYLOV, V. N., Viral genetics

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AGOL, V. I., Molecular Biology of Viruses, Moscow, "Nauka," 1971, 493 pp

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AGOL, V. I., Molecular Biology of Viruses, Moscow, "Nauka," 1971, 493 pp

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AGOL, V. I., Molecular Biology of Viruses, Moscow, "Nauka," 1971, 493 pp

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1/2 024

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--INVESTIGATION OF INTERFERON INDUCTION IN ANIMALS BY MEANS OF
DIFFERENT STIMULATORS -U-

AUTHOR--(05)--OGANESYAN, R.KH., FADEYEVA, L.L., TIKHONENKO, T.I.,
NIKOLSKAYA, I.I., PARFANOVICH, M.I.

COUNTRY OF INFO--USSR

SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 3, PP 287-291

DATE PUBLISHED--70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--INTERFERON, MEASLES, GAMMA GLOBULIN, HEPATITIS, MOUSE, RNA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/1853

STEP NO--UR/0402/70/000/003/0287/0291

CIRC ACCESSION NO--AP0125464

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125464

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PAPER PRESENTS THE RESULTS OF TESTS OF DIFFERENT PREPARATIONS AS INTERFERON STIMULATORS IN MICE. SYNTHETIC DOUBLE STRANDED COMPLEX OF POLYADENYLIC AND POLYURIDILIC ACIDS (POLY-AU), DOUBLE STRANDED REPLICATIVE FORM OF RNA OF MEASLES VIRUS, GAMMA GLOBULINS OF HUMAN AND HORSE ORIGIN WERE FOUND TO BE ACTIVE INDUCERS OF INTERFERON IN MICE. THE PREPARATIONS UNDER STUDY WERE NOT TOXIC FOR THE ANIMALS. THESE INTERFERON INDUCERS SHOWED ANTIVIRAL ACTIVITY IN MICE AGAINST VIRUS OF MURINE HEPATITIS PROVIDED THE PREPARATION WAS INOCULATED BEFORE THE INFECTION. FACILITY: INSTITUT VIRUSOLOGII IMENI D. I. IVANOVSKOGO AMN SSSR, MOSKVA.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--ELECTRON MICROSCOPY OF THE DNA OF BACTERIOPHAGE SW LYSING
B(ACILLUS) SUBTILIS -U-
AUTHOR-(03)-NARODITSKIY, B.S., ULANOV, B.P., TIKHONENKO, I.I.
COUNTRY OF INFO--USSR
SOURCE--BIOFIZIKA 1970, 15(1), 187-9
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--DNA, BACTERIOPHAGE, BACILLUS SUBTILIS, ELECTRON MICROSCOPY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1988/0021 STEP NO--UR/0217/70/015/001/0187/0189
CIRC ACCESSION NO--AP0105120
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105120

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DNA OF PHAGE SW WAS EXTD. WITH
4.5M NACLO SUB4 AND STUDIED BY ELECTRON MICROSCOPY. THE MEAN VALUE FOR
THE LENGTH OF THE DNA MDL. WAS 65 MU, CORRESPONDING TO A MDL. WT. OF 130
TIMES 10 PRIME6 DALTONS. FACILITY: D. I. IVANOVSKII INST.
VIROL., MOSCOW, USSR.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--C3JUL7C

TITLE--THE REACTION OF C, METHYLHYDROXYLAMINE WITH DNA IN SOLUTION AND
INSIDE THE PHAGE PARTICLES -U-

AUTHOR--SKLYADNEVA, V.B., RISELEVA, N.P., BUCOVSKIY, E.I., TIKHONENKO,
T.I.

COUNTRY OF INFO--USSR

SOURCE--MOLEKULYARNAYA BIOLOGIYA, 1970, VOL 4, NR 1 PP 116-17

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--HYDROXYLAMINE, DNA, PHAGE, CHEMICAL REACTION MECHANISM,
CYTOSINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1978/C566

STEP.NC--UR/C463/70/004/001/0116/0117

CIRC ACCESSION AC--AF0045590

UNCLASSIFIED

19
5
24

Acc. Nr:

APO045590

Ref. Code: UR 0463

PRIMARY SOURCE: Molekulyarnaya Biologiya, 1970, Vol 4, Nr 1,
PP 116-117

THE REACTION OF O-METHYLHYDROXYLAMINE WITH DNA IN SOLUTION AND
INSIDE THE PHAGE PARTICLES

Sklyadneva, V. B.; Kiseleva, N. P.; Budovskiy, E. I.;
Tikhonenko, T. I.

Institute of Virology, Academy of Medical Sciences,
and Institute for Chemistry of Natural Products,
Academy of Sciences, USSR, Moscow

It was shown that the cytosine nuclei in native DNA regions practically did not react with O-methylhydroxylamine (MHA). At the same time the cytosine nuclei of denatured DNA regions did react with MHA, the rate of the last reaction being of the same order as that for cytidine. The correlation was shown between the degrees of the DNA denaturation and modification of the cytosine residues. During the reaction of

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MHA with S₄ phage (1 M MHA, pH 5.0, 32°, 150 hours) only 16—18 per cent of cytosine residues were modified. The data confirm the hypothesis concerning the specific conformation of a part of the intraphage DNA. It was shown that a complicated dependence existed between the degree of phage DNA modification and the stability of virions. Such dependence is supposed to be due to formation of an intermediate products of cytosine nuclei modification which give covalent cross-linkages between head protein and intraphage DNA.

2/2

19780567

lc

USSR

NARODITSKIY, B. S., ULANOV, B. P., and TIRHONENKO, T. I., Institute of Virology
imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, and Institute of
Chemical Physics, Academy of Sciences USSR

"Electron Microscopy of DNA of Bacteriophage SW That Lyses *B. subtilis*"

Moscow, Biofizika, No 1, 1970, pp 187-189

Abstract: Bacteriophage SW DNA was extracted with 4.5 M NaClO₄. The mean length of the molecule was 66 microns, which corresponds to a molecular weight of $130 \cdot 10^6$ daltons. A histogram of the distribution of DNA by molecular weight shows that the mean value of the molecular weight was $130 \pm 5 \cdot 10^6$ daltons. Besides molecules of this length, the preparation also contained structures with a molecular weight of less than $20 \cdot 10^6$ and more than $130 \cdot 10^6$ daltons. However, there were no more than 5 percent of the former and 8 percent of the latter. The presence of low-molecular fragments was probably caused by mechanical rupture of the untreated molecules both during dilution of the original solution and during its preparation. Structures with a molecular weight of $150 \cdot 10^6$ daltons were probably formed as a result of the aggregation of untreated molecules with low-molecular material.

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- 45 -

014
UNCLASSIFIED
TITLE--EFFECT OF RECONSTRUCTION OF THE ROOF ON THE FORMATION OF ACETABULUM
-U-
AUTHOR--(02)-TIHONENKOV, YE.S., TURNER, G.I.
COUNTRY OF INFO--USSR
SOURCE--ORTOPEDIYA, TRAVMATOLOGIYA I PROTEZIROVANIYE, 1970, NR 4, PP 36-40
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--PEDIATRICS, ORTHOPEDIC SURGERY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/1403
CIRC ACCESSION NO--AP0125046
STEP NO--UR/9115/70/000/004/0036/0040
UNCLASSIFIED

272 014
CIRC ACCESSION NO--AP0125046
ABSTRACT/EXTRACT--(U) GP-0-
UNCLASSIFIED
PROCESSING DATE--23OCT70
ABSTRACT. THE WORK IS DEVOTED TO PLASTY OF THE UPPER RIM OF THE ACETABULUM IN OPER REDUCTION OF EXTRAARTICULAR DEROTATION VARISATION OSTEDTOMY OF THE PROXIMAL PORITON OF THE FEMUR BASED ON THE MATERIAL OF 133 OPERATED JOINTS IN CHILDREN RANGING IN AGE FROM 3 TO 10 YEARS, OF WHOM PLASTY OF THE ROOF HAS BEEN PERFORMED IN 26 CASES. DATA ARE SUBMITTED ON THE INFLUENCE OF PLASTY ON THE MEASUREMENT OF ANGLE OF VERTICAL ACETABULAR SLOPE. BASING ON THE OBTAINED DATA THE AUTHOR SUGGESTS THAT PLASTY OF THE UPPER ACETABULAR RIM IS FOLLOWED NOT ONLY BY DECREASE OF ANGLE OF VERTICAL ACETABULAR INCLINATION WHICH PROMOTES STABILIZATION OF JOINT AND IMPROVES CENTRATION OF THE FEMORAL HEAD IN THE SOCKET, BUT ALSO EXERTS S STIMULATING EFFECT ON THE FORMATION OF TIS UPPER RIM. PLASTY MAY BE APPLIED IN CHILDREN FROM THE THIRD YEAR OF LIFE AND ELDER BOTH IN SUPKAACETABULAR DISLOCATIONS AND IN SUBLUXATIONS, WHERE DUE TO MALDEVELOPMENT OF THE ACETABULAR ROOF THE ANGLE OF TIS VERTICAL SLOPE DOES NOT EXCEED 53-56 DEGREES (DEPENDING ON AGE OF CHILD).
FACILITY: LENINGRAD DETSKOGO ORTOPEDICHESKOGO INSTITUTA IM.

UNCLASSIFIED

USSR

UDC 542.91:547.1'118:547.558.1:547.564.4

TIKHONINA, N. A., GILYAROV, V. A., and KABACHNIK, M. I., Institute of
Organometallic Compounds, Academy of Sciences USSR

"Reaction of Triphenyl Phosphite With o-Aminophenol"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, Jun 73,
p 1426

Abstract: A mixture of 13.67 g o-aminophenol and 4.95 g triphenylphosphite
heated for 4 hrs at 160-175° in a stream of argon yielded 2,3,7,8-dibenzo-
1,6-dioxo-4,9-diaza-5-phosphaspiro-[4,4]-nonane, m.p. 155-155.5°.

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- 20 -

USSR

UDC 547.285.5

KABACHNIK, M. I., Academician, TIKHONINA, N. A., KOROLEV, B. A., GILYAROV, V. A., Institute of Organoelemental Compounds, Academy of Sciences of the USSR; All-Union Scientific Research Institute of Organic Intermediate Products and Dyes, Moscow

"2-Phosphabenzoxazoles -- a New Type of Cyclic Imidophosphoric Compounds"

Moscow, Doklady Akademii Nauk SSSR, Vol 204, No 6, 21 Jun 72, pp 1352-1355

Abstract: The authors study the basicity of aromatic (or pseudoaromatic) rings containing the P=N bond but without strongly electronegative substituents associated with the nitrogen atom. The 2-phosphabenzoxazole system is selected as a representative, being a cyclic analog of phenoxy N-phenylimidophosphorans, and a phosphorus analog of benzoaxazole. The yields, constants and results of analyses of the 2-phosphabenzoxazoles are given together with the methods of synthesis developed by the authors. An investigation of some of the properties of these compounds shows that a sharp reduction in basicity of the P=N bond can be attributed to closure of a five-member ring which might possibly be aromatic in nature.

1/1

USSR

UDC 547.26'118

GILYAROV, V. A., TIKHONINA, N. A. and KARACHNIK, M. I.; Institute of Heteroorganic Compounds, USSR Academy of Sciences

"Reactions of Imides of Phosphorus Acids with Phosphorylating Agents and Trimethylchlorosilane"

Leningrad, Zhurnal Obshchey Khimii, Vol XLI, No. 11, Nov 1971, pp 2355-2357

Abstract: Substances of the type $[(C_2H_5O)_2P(O)]_2NO_2C_6H_5$ are obtained from sodium derivatives of amidophosphates $(HO)_2P(OR)Na$ and phosphoryl chlorides. However, no one has succeeded in synthesizing bis(diphenylphosphinyl)aniline from sodium diphenyl-N-anilidophosphinate. The reaction of imidophosphorus compounds with certain phosphoryl chlorides and with trimethylchlorosilane. It was found possible to synthesize diphosphorylamines from imidophosphorus compounds and phosphoryl chlorides; and trimethylsilylanilidophosphates from N-phenylimidophosphorus compounds and trimethylchlorosilane.

1/1

Thin Films

UDC 537.523.5:621.79

USSR

IVANOV, R. D., TIKHONOV, A. A., UKRAINSKIY, YU. M., and
URAZALIYEV, U. S., Moscow

"Microstructure, Phase, and Chemical Composition of Thin Permal-
loy Films As Affected by Cathode-Plasma Sputtering Conditions and
Negative Space Charge on Substrate Surface"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 70,
pp 61-68

Abstract: The authors obtained films on both flat and cylin-
drical substrates using an apparatus based on the three-electrode
system principle, employing either a glow-discharge cathode or a
cathode-plasma sputtering regime. Permalloy 79NM was used as
the target, ultrapure xenon as the process gas. The structural
properties and chemical composition of the films were studied by
electron microscopy (size of the crystallites on the film sur-
face), electron diffraction (phase composition of a film on the
surface), x-ray diffraction analysis (phase composition and lat-
tice spacing of phase components according to the film volume)

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USSR

IVANOV, R. D., et al., Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 70, pp 61-68

and x-ray fluorescence analysis (overall content of alloy components in a multicomponent target and film).

An increase in the target potential results in a sharp increase in the average crystallite size, as well as partially oriented crystallization of the films. Gamma-phase crystallites with {110} planes are parallel to the substrate surface. In addition to the gamma phase, a constant impurity in the films under all cathode-plasma sputtering conditions is antiferromagnetic NiO with a polycrystalline structure and a more highly dispersed microstructure than ferromagnetic gamma-phase crystals. There is a quantitative increase in NiO with increased target potential. There is a clearly pronounced tendency towards increased iron content with increased target potential. Iron enrichment of the ferromagnetic gamma phase takes place, the enrichment being more pronounced the more intensive the cathode-plasma sputtering regime. The pressure during the sput-

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USSR

IVANOV, R. D., et al., Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 70, pp 61-68

tering process has a marked effect on the film dispersity, viz. the lower the pressure of the process gas and of the residual gases before letting in the process gas, the larger the crystallites. In cathode sputtering an inevitable result of the sputtering is a space charge on the surface of the isolated substrate. The charge potential was measured. It is shown that this charge reduces the rate of film deposition, affects the microstructure, and possibly promotes iron enrichment of the Permalloy films. The presence of oxide inclusions and the increased overall iron content of the film, especially the ferromagnetic gamma phase, cause increased coercive force and anisotropy field values and a positive magnetostriction sign.

3/3

USSR

UDC 539.218.2:621.318.14519.013

IVANOV, R. D., TRIZALYEV, U. S., TIKHONOV, A. A., and BONDARENKO, Yu. G. (ceased)

"Internal Macro-stresses in Thin Permalloy Films Produced by Cathodic Plasma Atomization"

Sverdlovsk, Akademiya Nauk SSSR, Fizika Metallov i Metallovedeniya, Vol. 22, No 1, Jul 70, pp 187-189

Abstract: An investigation was made of the internal macro-stresses in thin films of Permalloy produced by cathodic plasma atomization on glass basing on an argon atmosphere. The stresses determined by the classical method on a flexible base are presented in curves characterizing their behavior in dependence from the primary bundle of argon ions. An increased base temperature increases the contribution of thermal stresses and decreases the residual stresses; an increase of the growing rate of the films affects an increase of structural macro-stresses. The Permalloy films show a layered structure, the layer number increases with increasing film thickness. Therefore, the thermal stresses are determined basically by the first film layers.

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USSR

UDC 669.245:589.23

IVANOV, R. D., URAZALIYEV, U. S., TIKHONOV, A. A., SALANSKIY, N. M., and
BUNAREV, V. I.

"Effect of Plasma on the Structure and Magnetic and Electric Properties of
Thin Permalloy Films"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 34, No 2, Aug 72, pp 256-
262

Abstract: The effect of plasma and of physico-technological properties of the
cathodic precipitation method on the structure and magnetic and electric prop-
erties of thin Permalloy films was experimentally investigated. The films were
produced by atomization of the 79NM alloy. Their crystalline structure was
investigated by methods of electron beam optics, and their chemical composition
was tested by the x-ray fluorescence analysis method. The bombardment of the
substrate surface by charged particles was found to produce a diversity in the
microstructure of the film. The mechanism of forming precipitated cathodic
films is in full agreement with thermodynamic principles for nonequilibrium
statistical systems. Five figures, five bibliographic references.

1/1

- 82 -

1/2 028
TITLE--INFLUENCE OF FLOW NONUNIFORMITY ON THE EFFICIENCY OF HEAT EXCHANGERS -U-
AUTHOR--TIKHONOV, A.M.
COUNTRY OF INFO--USSR
SOURCE--INZHERNERNO-FIZICHESKII ZHURNAL, VOL. 18, APR. 1970, P. 678-687
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--HEAT EXCHANGER, FLOW DISTRIBUTION, THERMODYNAMIC EFFICIENCY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/1381
CIRC ACCESSION NO--AP0125029
STEP NO--UR/0170/70/018/000/0678/0687
UNCLASSIFIED

2/2 028

CIRC ACCESSION NO--AP0125029
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT. ANALYSIS OF THE EFFICIENCY OF HEAT EXCHANGERS IN THE CASE OF A NONUNIFORM DISTRIBUTION OF ONE OF THE HEAT TRANSFER AGENTS. IT IS SHOWN THAT THE MEAN INTEGRAL VALUE OF NONUNIFORMITY HAS A PRONOUNCED INFLUENCE ON HEAT EXCHANGER EFFICIENCY AND IS, THEREFORE, WELL SUITED AS A NONUNIFORMITY CRITERION. GENERALIZED QUANTITATIVE RELATIONS ARE DERIVED WHICH MAKE IT POSSIBLE TO ESTIMATE HEAT EXCHANGER EFFICIENCY AS A FUNCTION OF NONUNIFORMITY.
FACILITY: TSENTRAL'NYI NAUCHNO-ISSLEDOVATEL'SKII INSTITUT AVIATIONNOGO MOTORROSTROENIIA, MOSCOW, USSR.

UNCLASSIFIED

172 020
TITLE--INVESTIGATION OF HEAT TRANSFER IN Z SHAPED HEAT EXCHANGERS -U-
AUTHOR--TIKHONOV, A.M.
COUNTRY OF INFO--USSR
SOURCE--INZHENERNO-FIZICHESKII ZHURNAL, VOL. 18, MAR. 1970, P. 427-435
DATE PUBLISHED---MAR 70
SUBJECT AREAS--PHYSICS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--HEAT EXCHANGER, HEAT TRANSFER RATE, THERMODYNAMIC EFFICIENCY,
TEMPERATURE GRADIENT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1996/1442
CIRC ACCESSION NO--AP0118431
STEP NO--UR/0170/70/018/000/0427/0435
UNCLASSIFIED

2/2 020

CIRC ACCESSION NO--AP0118431
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT. ANALYSIS OF THE INTRINSIC HEAT TRANSFER CHARACTERISTICS OF REGENERATIVE HEAT EXCHANGERS OF SMALL DIAMETER AND LENGTH, IN WHICH CROSS FLOW REGIONS AT THE INPUTS OF THE WORKING FLUID CANNOT BE AVOIDED. SCHEMATIC DIAGRAMS OF SUCH HEAT EXCHANGERS WITH AND WITHOUT AIR MIXING ARE EXAMINED. THE PARAMETERS DEFINING THE THERMAL EFFICIENCY OF THE HEAT EXCHANGERS ARE DETERMINED, AND GENERALIZED RELATIONS FOR CALCULATING THE TEMPERATURE PROFILE AT THE HEAT EXCHANGER OUTLET, THE DEGREE OF REGENERATION, AND OTHER DESIGN PARAMETERS ARE DERIVED.

FACILITY: TSENTRAL'NYI
NAUCHNO-ISSLEDOVATEL'SKII INSTITUT AVIATIONNOGO MOTOROSTROENIIA,
MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 518:517.948

TIKHONOV, A. N., SHEVCHENKO, V. G., ZAIKIN, P. N., ISHKHANOV, B. S.,
MECHENOV, A. S.

"Calculating the Cross Section of a Photonuclear Reaction From Experimental
Information"

Moscow, Vestnik Moskovskogo Universiteta: Ser. III, Fizika, Astronomiya,
Vol 14, No 3, May/Jun 73, pp 317-325

Abstract: The authors examine certain questions of computer calculation of the numerical value of the cross section of a photonuclear reaction $\sigma(k)$ in accordance with an indirect phenomenon -- the yield of emission products of the reaction $Y(E)$. The paper describes a modification of the Penfold-Leiss method with parametrization of the working step. Also described is a regularizing algorithm in which the sampling criterion is the degree of smoothness of the approximation. Model problems are presented to illustrate the effectiveness of using these algorithms.

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- 56 -

USSR

UDC: 518:517.9:53

GLASKO, V. B., KULIK, N. I., ~~TIKHONOV, A. N.~~, MOSCOW

"On Determination of a Geoelectric Cross Section Based on the Method of Regularization"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol 12, No 1, Jan/Feb 72, pp 139-149

Abstract: Measurement of the apparent resistance at the surface of the earth is an incorrect approach to the problem of determining a geoelectric cross section. The authors propose an algorithm for solving this problem which is based on the general method of regularization. This algorithm is applicable to a fairly broad class of plane structures, including the case of continuous variation of conductivity, in particular within individual layers. It is shown that if the initial data are sufficiently accurate, the proposed regularizing algorithm enables definition of fairly complicated cross sections with precision which is satisfactory for practical purposes. Five figures, bibliography of fourteen titles.

1/1

USSR

UDC 517.864

~~TIKHONOV, A. N.~~, SAMARSKIY, A. A., and ARSEN'YEV, A. A. (Moscow)

"On a Method of Asymptotic Integral Evaluations"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol 12,
No 4, Jul-Aug 72, pp 1005-1012

Abstract: In earlier articles dealing with the problem of finding the asymptotic behavior of definite integrals with a kernel of the delta-function type, the authors encountered a specific difficulty: viz., the fact that termwise integration of the asymptotic expression for the integrand leads to formally infinite coefficients for the asymptotic behavior of the integral -- a situation which is characteristic of many asymptotic problems. The present article suggests a special method of asymptotic integral evaluations to overcome this difficulty, based on recurrence relations derived in the earlier articles. The asymptotic behavior of integrals on a finite interval and an infinite interval is considered, and the fundamental formula of the proposed method is given.

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- 6 -

USSR

UDC 539.389

LEPIN, G. F., TIKHONOV, A. P., and AGULOV, V. T.

"Optimal Deformational Strengthening of Metals and Alloys in the Presence of Creep"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 1, Jan/Feb 73, pp 76-79

Abstract: A theoretical method is suggested for a solution to the question of the behavior of metals under high temperatures and loadings after preliminary deformation at certain temperature and stresses. From the interrelation between the value of optimal preliminary deformation and stresses, the following equation of minimal creep deformation is derived:

$$\beta = n \left(\beta / 1 - \exp \frac{ak\beta}{1-n} \right)^{1-n} \exp \left(ak\beta / 1 - \exp \frac{ak\beta}{1-n} \right)$$

where a , n , k are the heat-resistant characteristics of a metal at a given temperature; $\beta = \sigma_0 \epsilon$ (σ_0 is the initial stress in a sample subjected to loading, ϵ is the relative plastic deformation). This equation makes it possible to solve a great number of problems encountered in design work. As an example, the creep curves of the EI437B alloy at 650°C calculated from the above equation are presented.

1/1

USSR

UDC: 669.017:53+669.017:539.4

TIKHONOV, A. S., SHORSHOROV, M. Kh., Moscow

"Strength of Superplastic Two-Phase Alloys"

Kiev, Problemy Prochnosti, No 12, Dec 72, pp 98-101.

Abstract: Results are presented from an experimental study of the strength and ductility indicators of two-phase superplastic alloys under high and low temperature deformation conditions. Data are presented on alloys in the Ni-Cr, Ni-Mo, and Al-Si systems. It is indicated that the factor of high dispersion in the structure of these alloys provides not only high plasticity and reduced deformation resistance at high temperatures, but also maximum (within the concentration range studied) strength at low deformation temperatures. The regularities of the influence of grain size in these aggregates on their strength and ductility are analyzed, as well as the reasons for the great, even deformation occurring in superplasticity.

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- 25 -

USSR

UDC 620.18:539.4

SHORSHOROV, M. KH., and TIKHONOV, A. S., Moscow

"Interrelation Between the Superplasticity Effect and the Interphase Boundary Length in Nickel-Chromium Alloy"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 3, May/Jun 73, pp 84-89

Abstract: Experimental work was carried out with Ni + 49% Cr alloy subjected to vacuum annealing at 950, 1100, and 1200°C for 24, 3, and 8 hours, respectively. This type of annealing produced the following interphase specific surface (s): 325, 235, and 60 mm²/mm³ at 950, 1100, and 1200°C, respectively. The role of diffusion processes taking place at the grain boundaries sharply increased with increasing specific interphase surface, and this led to the deformability resources increase (σ , ψ) or to a deformation resistance decrease (σ_b , σ_s) at constant deformation temperature. A relative decrease in strength or increase in plasticity with increasing s parameters was considerably higher at temperatures facilitating a high diffusional mobility of atoms in the crystal lattice of the matrix and the second phase (soft).

1/1

Forming

USSR

UDC 669.1:539.5:541.1

TIKHONOV, A. S.

"Elements of the Physical-Chemical Theory of Malleability of Alloys"

Elementy Fiziko-khimicheskoy Teorii Deformiruemosti Splavov [English Version Above], Nauka Press, Moscow, 1972, 156 pages.

Translation of Annotation: This monograph studies the basic problems of pressure working of metals and alloys, related to the physical and chemical area of the theory of plastic deformation of metal materials. Primary attention is given to the physical nature of plastic form alteration of alloys of certain metals, classification and principles of construction of diagrams of malleability of various types, as well as problems of the selection of optimal working modes for alloys in various stages of the technological cycle. Broad experimental information is presented on the ductility and deformation resistance of alloys in various systems. The phenomenon of superplasticity of metals and alloys is studied separately. In particular, the theoretical principles of this effect are discussed, as well as problems of its use for practical purposes.

The book is designed for a broad range of theoreticians and practical metallurgists, involved with problems of pressure working of metals and alloys and metals science; it can also be used as a text for students and

USSR

TIKHONOV, A. S., Elementy Fiziko-khimicheskoy Teorii Deformiruemosti Splavov, Nauka Press, Moscow, 1972, 156 pages.

graduate students in these specialties. Some sections of the monograph are of interest for specialists in the area of metal physics. 107 Figures; 8 Tables; 344 Biblio. Refs.

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TIKHONOV, A. S., Elementy Fiziko-khimicheskoy Teorii Deformiruemosti Splavov, Nauka Press, Moscow, 1972, 156 pages.

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USSR

TIKHONOV, A. S., Elementy Fiziko-khimicheskoy Teorii Deformiruemosti Splavov, Nauka Press, Moscow, 1972, 156 pages.

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4/4

TIKHONOV, A. S.

*Delivered to the Library
of the USSR Academy of Sciences
30 March 1973*

ON THE THEORY OF SUPERPLASTICITY

UDC 539.214

R. P. Gur'ov, M. Kh. Shorahorov, A. S. Tikhonov, and N. I. Nadirashvili,
Institute of Metallurgy Imeni A. A. Baikov of the USSR Academy of Sciences,
submitted to press 5 January 1972
pages 1145-1149

A theoretical model is proposed in which the optimum conditions of superplasticity are connected with the maximum developed interphase surface of the fluctuation nuclei of the new phase. An estimate of the distribution of these nuclei according to dimensions, as a function of temperature, is performed from the standpoint of the theory of pre-translational phenomena of Ya. I. Frenkel'. A comparison of the calculation data with the experimental results for a number of systems demonstrated the validity of such a model.

At the present time we may consider the concept that in the phenomenon of superplasticity of metallic materials the surface effects play the determining role (the effects at the inter-phase and inter-grain boundaries) may be considered as generally accepted. In connection with this, the use of the idea of Ya. I. Frenkel' [1] for estimation of the optimum conditions of superplasticity appears feasible.

The fact that the temperature corresponding to the optimum conditions of superplasticity lies close (but is not equal) to the temperature of the phase transition (the polymorphic transformation or melting) calls attention to itself. According to the considerations of Ya. I. Frenkel', the given temperature region should be considered as a "pre-transition" state of a system having its own specific features, caused by the presence of fluctuation nuclei of the new phase in the aggregate at the temperatures indicated. These nuclei appear all the time and disappear, or change their dimensions, but there is a dynamic equilibrium between them, that is, in the given case, we may speak of an entirely stable distribution of the nuclei according to

dimensions (at a constant temperature). According to Frenkel, this distribution is characterized by the ratio

$$n_g = N \exp \left\{ - \frac{N \Delta G}{kT} \right\} \quad (1)$$

Here n_g is the number of nuclei containing g atoms; N is a standardizing multiplier, k is the Boltzmann constant; ΔG is the variation of the thermodynamic potential of the system in the formation of a nucleus of the new phase in it. We may assume that ΔG consists of two items, considering the volumetric thermal effect of the transition of the nucleus of surface tension in the nuclei of the new phase. Generally speaking, there is still a third item, connected with the appearance of the microstresses because of local deformation (strain) in the vicinity of the nucleus. However, we ignore this effect; we will speak further of the permeability of ignoring the effect at the end of the article.

According to Frenkel, for an estimate of ΔG we may use the formula

$$\Delta G = Q \frac{(T - T_0)}{T} + \beta R^2 \quad (2)$$

where Q is the latent heat of the transition (referred to one atom) at the true temperature T_0 of the phase transition ($Q < 0$ at $T < T_0$), and $\beta R^2/3$ is the variation of ΔG because of the appearance of surface tension ($\beta < 0$).

Thus, according to this model, in the region of a pre-transition state both the approximation of the temperature to the true temperature of transition, and the number of nuclei and their distribution with respect to dimensions varies. In this case, far from the temperature T_0 the number of nuclei and the total area of their surfaces are negligible, but as T approaches T_0 phase and the area of the internal inter-phase surfaces tend toward zero. Therefore, the total area of the surfaces of the nuclei as a function of the temperature must pass through an extreme (a maximum).

We assume that between the temperature corresponding to such an extreme and the optimum temperature of superplasticity there must be a definite correlation. In this work an attempt is made to establish such a correlation by means of approximate estimation of the temperature corresponding to the maximum total area of the surfaces of the nuclei. We must emphasize that if we succeed in confirming the presence of such a

USSR

UDC 539.37:539.40

BULAT, S. I., GRIGOROVICH, V. K., OSIPOV, V. G., and TIKHONOV,
A. S., Moscow

"Ductility and Strength of Alloys in the Copper-Nickel Systems"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 2, Mar-Apr 71, pp 157-161.

Abstract: Results are presented from an experimental study of the ductility and strength characteristics of copper-nickel alloys at the temperatures of hot deformation and at room temperature. The ductility and strength were studied in extension and during hot rolling. The greatest deformation resistance at room temperature is that of the alloy of copper with 60% nickel. As the temperature increases, this maximum is displaced toward the more refractory component -- nickel. The strength maxima correspond to the minima of relative reduction in area, elongation, and permissible reduction in rolling. These factors are interpreted from the thermodynamic standpoint.

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USSR

UDC 539.4

BULAT, S. I., OSIPOV, V. G., ~~TIKHONOV, A. S.~~

"Effect Which the Nature of Distribution of the Second Phase has on the Ductility of Kh18N10T Stainless Steel"

V sb. Protsessy formoizmeneniya met. i splavov (Processes of Deformation of Metals and Alloys--collection of works), Moscow, "Nauka", 1971, pp 137-140 (from RZh-Mekhanika, No 10, Oct 71, Abstract No 10V785)

Translation: It is experimentally established that the technological ductility of Kh18N10T stainless steel during rolling depends not only on the average content of the second phase, but also on the nature of the distribution of this phase through the cross section of the strip being rolled. Two cases of ferrite distribution through the cross section of a Kh18N10T steel strip are established: accumulation of ferrite in the central part and almost total absence on the surface of the strip; an insignificant quantity of ferrite in the center, and accumulation in the form of short lines on the surface of the strip. Authors' abstract.

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Nickel

USSR

UDC: 539.37

OSIPOV, V. G., TIKHONOV, A. S., and SHORSHOROV, M. Kh.

"Mechanism of Superplasticity of a Nickel-Chromium Alloy of Eutectic Composition"

Moscow, Fizika i Khimiya Obrabotki Materialov, no 6, Nov-Dec 70, pp 76-81

Abstract: A discussion is presented of the experimental study of the effect of superplasticity in the Ni+Cr(49%) alloy close in its chemical composition to an eutectic concentration in the Ni-Cr system. A number of possible mechanisms of this phenomenon are analyzed. On the basis of calculating the vacancy creep rate and assessing the contribution of vacancies to the growth of cavities on deformation, it is suggested that diffusion (vacancy) viscosity referred to by R. F. Nabarro and C. Herring may be one of several possible mechanisms controlling the effect of superplasticity in the alloy Ni+49% Cr.

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Mechanical Properties

USSR

UDC 669.26'24:539.374.2

TIKHONOV, A. S., GRIGOROVICH, V. K., and BERAT, S. I., Institute of Metallurgy
Imeni A. A. Baykov, Central Scientific Research Institute of Ferrous Metallurgy
Imeni I. P. Bardin

"Ductility and Strength of Nickel-Molybdenum Alloys at High Temperature"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 11, Nov 70, pp
68-69

Abstract: Hot deformation of alloys with a molybdenum content of over 30% is considered, and an investigation is made of the mechanical properties at temperatures of deformation. The maximum strength at low temperatures corresponds to the most heterogeneous two-phase alloy. The microstructure of alloy Ni+30% Mo at temperatures of the appearance of the effect of superductility can be described by a uniform distribution of finely dispersed inclusions of stable δ -phase in a plastic matrix of α -solid solutions. Results of the investigation show that superductility can be observed not only in alloys of eutectic composition but also in heterogeneous alloys, whose structure is formed with the use of peritectic reaction.

1/1

USSR

UDC 539.37:669.813

SHORSHOROV, M. Kh., TIKHONOV, A. S., and KOFANOVA, G. N., Moscow
 "Strengthening of Titanium Alloys by Treatment in Superductility Modes"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 6, Nov-Dec 72, pp 89-94

Abstract: Results are presented from experiments conducted on VT-6 and VT-14 titanium alloys to determine the possibility of strengthening them by high-temperature deformation in superductility modes (small grain size and high density of lattice defects in the boundary sections of grains). The alloys used had the following chemical composition:

	Al	V	Mo	Fe	H ₂
VT-6	6.75	5.25	---	0.17	0.003
VT-14	5.10	1.17	3.00	0.20	0.003

These alloys were selected because of their low ductility at room temperature after standard heat treatment.

VT-14 alloy was subjected to six different forms of thermomechanical treatment: 1 -- extruded and water cooled; 2 -- extruded and air cooled;
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USSR

SHORSHOROV, M. Kh., et al., Fizika i Khimiya Obrabotki Materialov, No 6, Nov-Dec 72, pp 89-94

3 -- extruded, water cooled, and aged; 4 -- extruded, air cooled, and aged; 5 -- extruded, water cooled, cold rolled, and aged; 6 -- extruded, air cooled, cold rolled, and aged. The alloy was aged at 480°C for 10 hours after extrusion and at 300-310°C for 10 hours after cold rolling. VT-6 alloy was subjected to only three forms of thermomechanical treatment -- the same as processes 1, 3, and 5 above, except that it was aged at 500°C for two hours after extrusion and at 350°C for two hours after cold rolling.

Results of mechanical tests showed that for both alloys the treatment by extrusion, cold rolling, and aging provided the best combination of strength and ductility properties and, of the two alloys, VT-14 exhibited the greatest effect of strengthening because it contained less aluminum which increases atom diffusion mobility in the lattice when it is in the solid solution. Five figures, 10 bibliographic references.

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Acc. Nr.

AP0053765

Abstracting Service:
CHEMICAL ABST.

Ref. Code
UR0366

110955j Preparation and properties of primary α -hydroxyl-
aminoximes. Volodarskii, L. B.; Tikhonov, A. Ya. (Novosi-
birsk Inst. Org. Khim., Novosibirsk, USSR). *Zh. Org. Khim.*
1970, 6(2), 307-10 (Russ). The reaction of $\text{PhC}(\text{:NOH})\text{CH}_2\text{Br}$
with PhCH:NOH (anti configuration) at -40° in alc. gave
 $\text{HON:CPhCH}_2\text{N(O):CHPh}$ (I). Treatment of I with H_2NNH_2
gave $\text{HON:CPhCH}_2\text{NHOH}$ (II) identified by ir and NMR spec-
troscopy. On the basis of colored complex formation with Cu,
II was assigned the anti configuration of the NOH group. Ana-
logously, the reaction of $\text{MeC}(\text{:NOH})\text{CH}_2\text{Cl}$ with PhCH:NOH
gave $\text{HON:CMeCH}_2\text{N(O):CHPh}$ (III), which was converted
into $\text{HON:CMeCH}_2\text{NOH}$ (IV). The reactions of II or IV with
BzH gave back I or III. Heating II in acetone gave 1-hydroxy-
2,2-dimethyl-4-phenyl-3-imidazoline 3-oxide. The reaction of
IV with acetone gave only $\text{MeC}(\text{:NOH})\text{CH}_2\text{N(O)C:Me}$, tauto-
meric with the corresponding imidazoline oxide. CPJR

REEL/FRAME
19830828

USSR

UDC 681.325.36(088.8)

TIKHONOV, E. P.

"A Device for Measuring the Distribution Function of Random Signals "

USSR Author's Certificate No 354431 kl G 06 g 7/52, filed 8 Apr 70, published 10 Nov 72, (from RZh Avtomatika Telemekhanika i Vychislitel'naya Tekhnika, No 11, Nov 73, abstract No 11 A457)

Translation: A device is proposed for measuring the distribution function of random signals, containing a selection level regulator and a series-connected amplifier, modulator, input signal amplitude discriminator, and "exclusive OR" logical circuit, the input of which is connected with the amplitude discriminator for random amplitude pulses.

It also contains a strobe pulse generator connected with the appropriate input of the modulator and with the random amplitude pulse generator, the output of which is connected to the input of the random amplitude pulse amplitude discriminator; a reverse counter, the input of which is connected to the "exclusive OR" circuit and the output of which is connected to a digital-analog converter.

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USSR

TIKHONOV, E. P., USSR Author's Certificate No 354431 kl G 06 g 7/52, filed
8 Apr 70, published 10 Nov 72

To improve the speed of operation of the device, there is also an analog
adder, one input of which is connected to the output of the digital-analog
converter and the other input of which is connected to the output of the selector
level regulator and to the input of the input signal amplitude discriminator;
and a register, the input of which is connected to the auxiliary accumulator.
One illustration.

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USSR

TIKHONOV, E. P.

UDC: 681.3:658.56

"Device for Measuring the Correlation Function of Random Signals"

Avt. sv. SSSR, kl. G 06 f 15/34, No 338904, zavavl. 6.07.70, opubl.
13.06.72 Author's Certificate, USSR, class G 06 f 15/34, No 338904,
claimed 6 July 1970, published 13 June 1972) (from RZh--Avtomatika,
telemekhanika i vychislitel'naya tekhnika, No 2, 1973, Abstract No
2A515P)

Translation: A device is proposed for measuring the correlation
function of random signals, containing two channels each of which
contains a modulator connected through a subtracting circuit with
a shaper, an auxiliary signal generator connected to the subtract-
ing circuit, and a control system common to both channels, to a lo-
gic circuit whose outputs are connected to a reversing counter whose
outputs are connected with a counter. One illustration

USSR

UDC 621.52:681.32

CHERNYAVSKIY, YE. A. And TIKHONOV, G. A., Leningrad Electrotechnical Institute
"Automatic Counting and Monitoring Apparatus"

Avtomaticheskiya Ustroystva Ucheta i Kontrolya. Sb. statey (cf English
above--collection of articles), Izhevsk, Udmutriya, 1973, 239 pp, illustrated,
1 ruble, 15 kopeks (from RZh Avtomatika Telemekhanika i Vychislitel'naya
Tekhnika, No 11, Nov 73, abstract No 11 A347 K)

Translation: The collection includes materials from a scientific-technical
conference conducted in 1971 at the Instrument Design Faculty of the Izhevsk
Mechanical Institute. The materials reflect questions of the theory and
principles of design of elements and apparatus for computers and automated
recording and monitoring systems. Much attention is given to questions of
pattern recognition and prediction. The collection is intended for engineers
and scientific workers involved in the development of cybernetic control and
monitoring systems.

Abstract from the annotation.

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USSR

UDC: 621.372.544(088.8)

SHCHERBAKOV, N. S., TIKHONOV, G. A., ZUBAREVA, N. A., GVOZDEV, S. A.
"A Flip-Flop Device"

USSR Author's Certificate No 263665, filed 18 Nov 68, published 8 Jun 70
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6G300 P)

Translation: A flip-flop device based on potential AND-OR logic elements is proposed. The device contains main and auxiliary setting flip-flops and four controlling circuits. To improve the operational reliability of the device, the outputs of the controlling circuits of the main setting flip-flop are connected to dissimilar inputs of the auxiliary setting flip-flop, and the outputs of the controlling circuits of the auxiliary setting flip-flop are connected to identical inputs of the main setting flip-flop. The inputs and outputs respectively of each of the controlling circuits of the main and auxiliary flip-flop are interconnected.

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